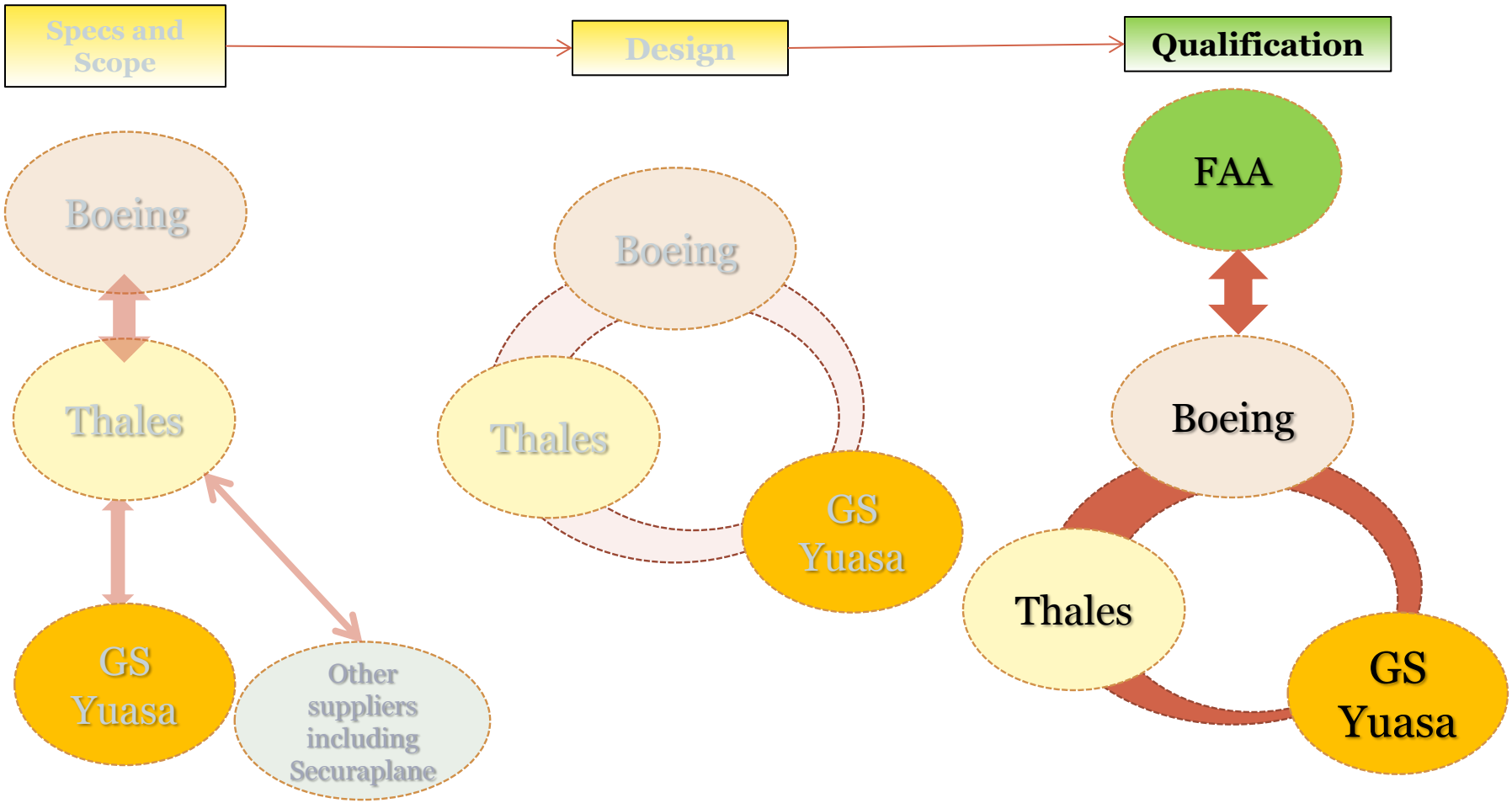
PRESENTATION BEFORE THE NTSB INVESTIGATIVE HEARING JAPAN AIRLINES, JA829J BOEING 787 BATTERY FIRE

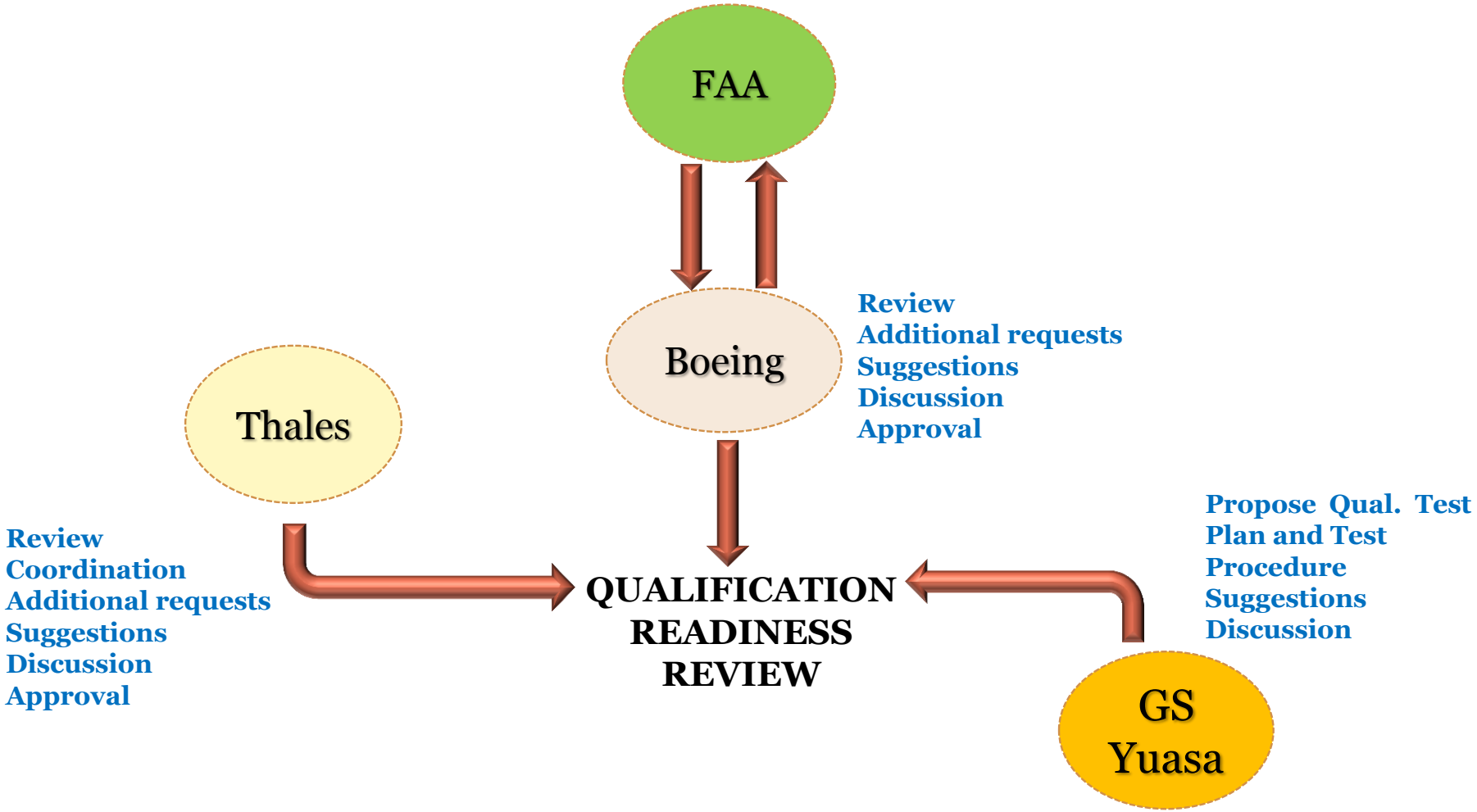
PANEL 3: 787 BATTERY DESIGN VERIFICATION & VALIDATION

APRIL 24, 2013

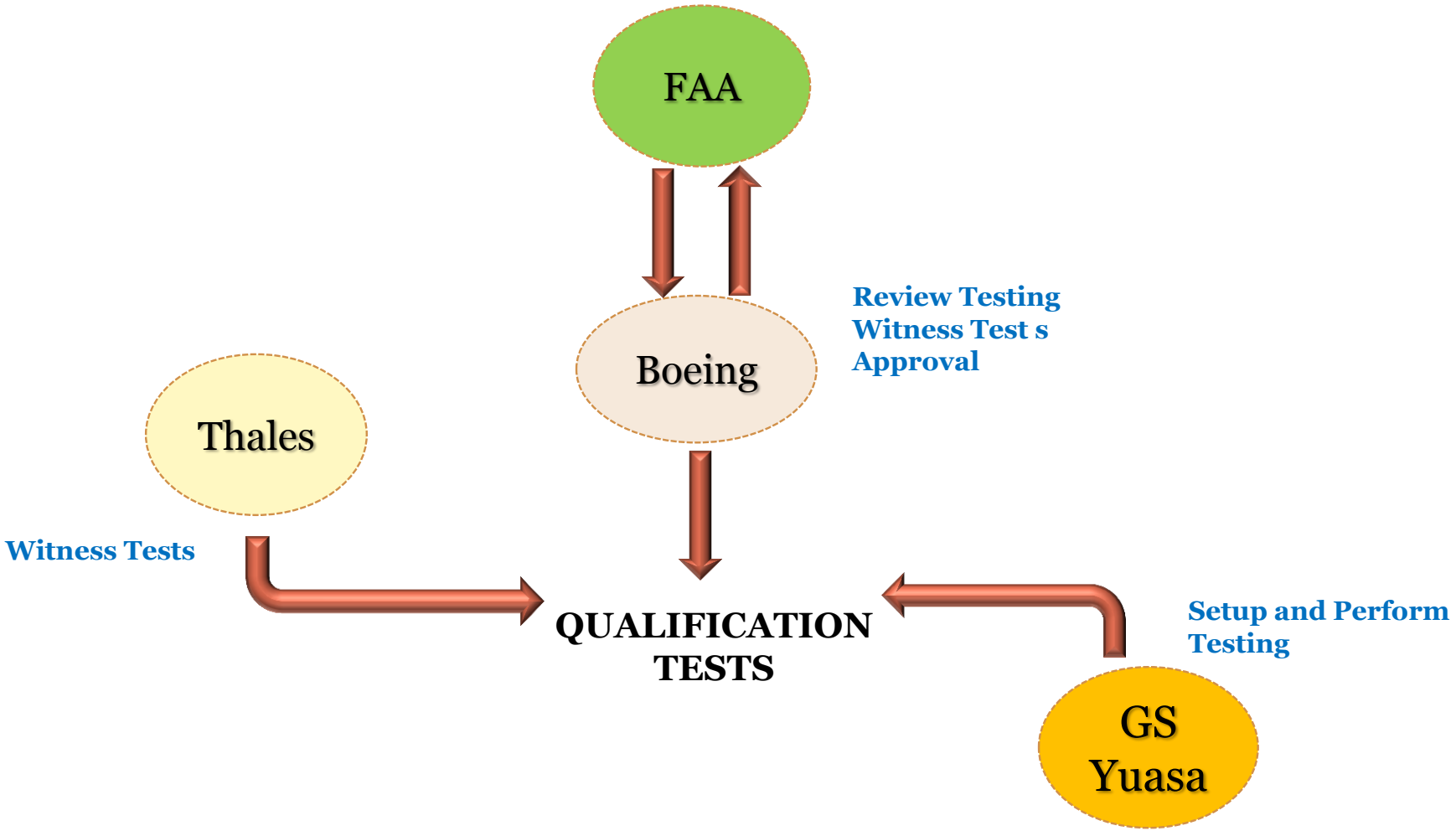
Process & Roles: Qualification



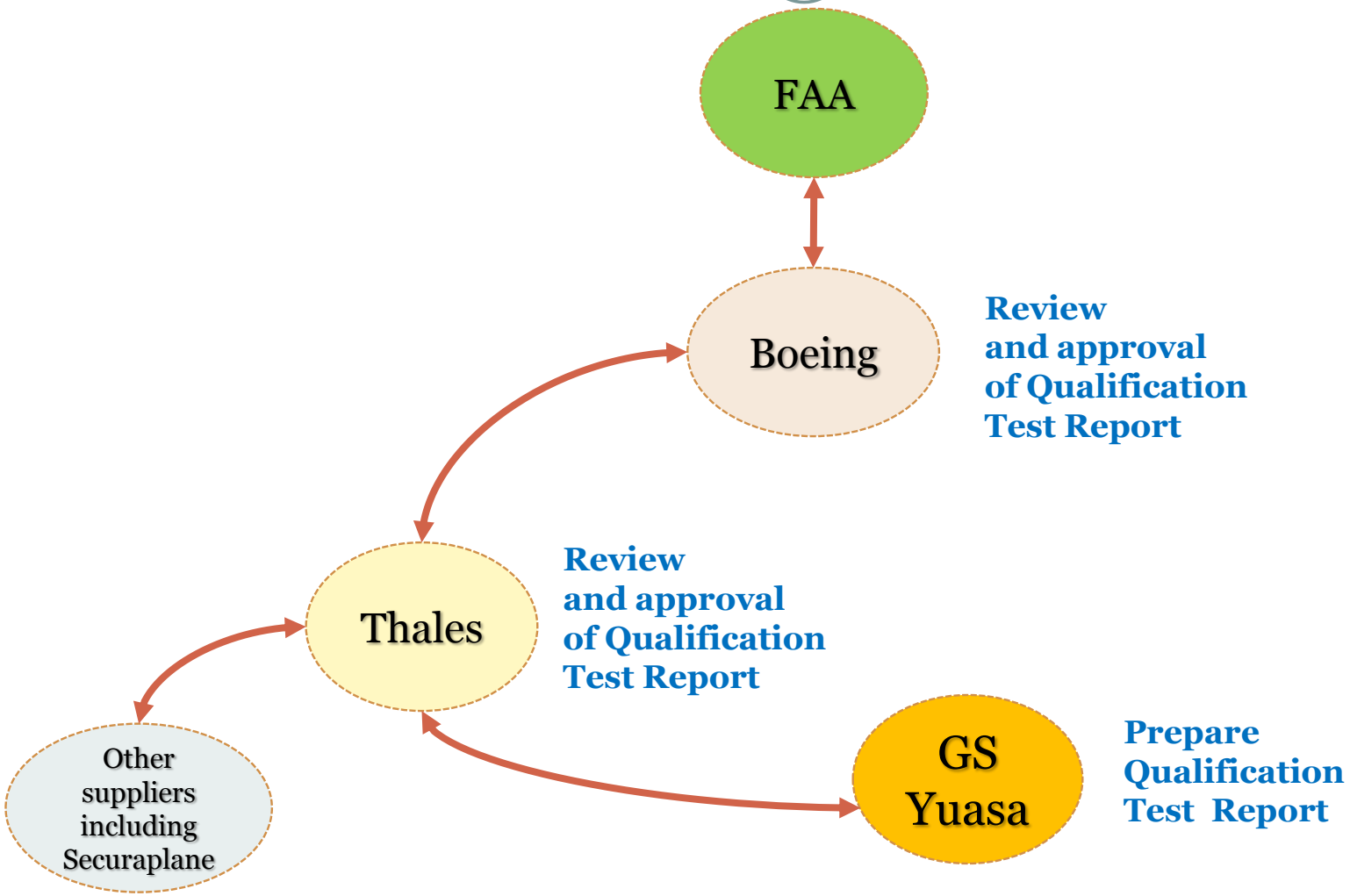
Collaboration: Qualification Review



Collaboration: Qualification Test

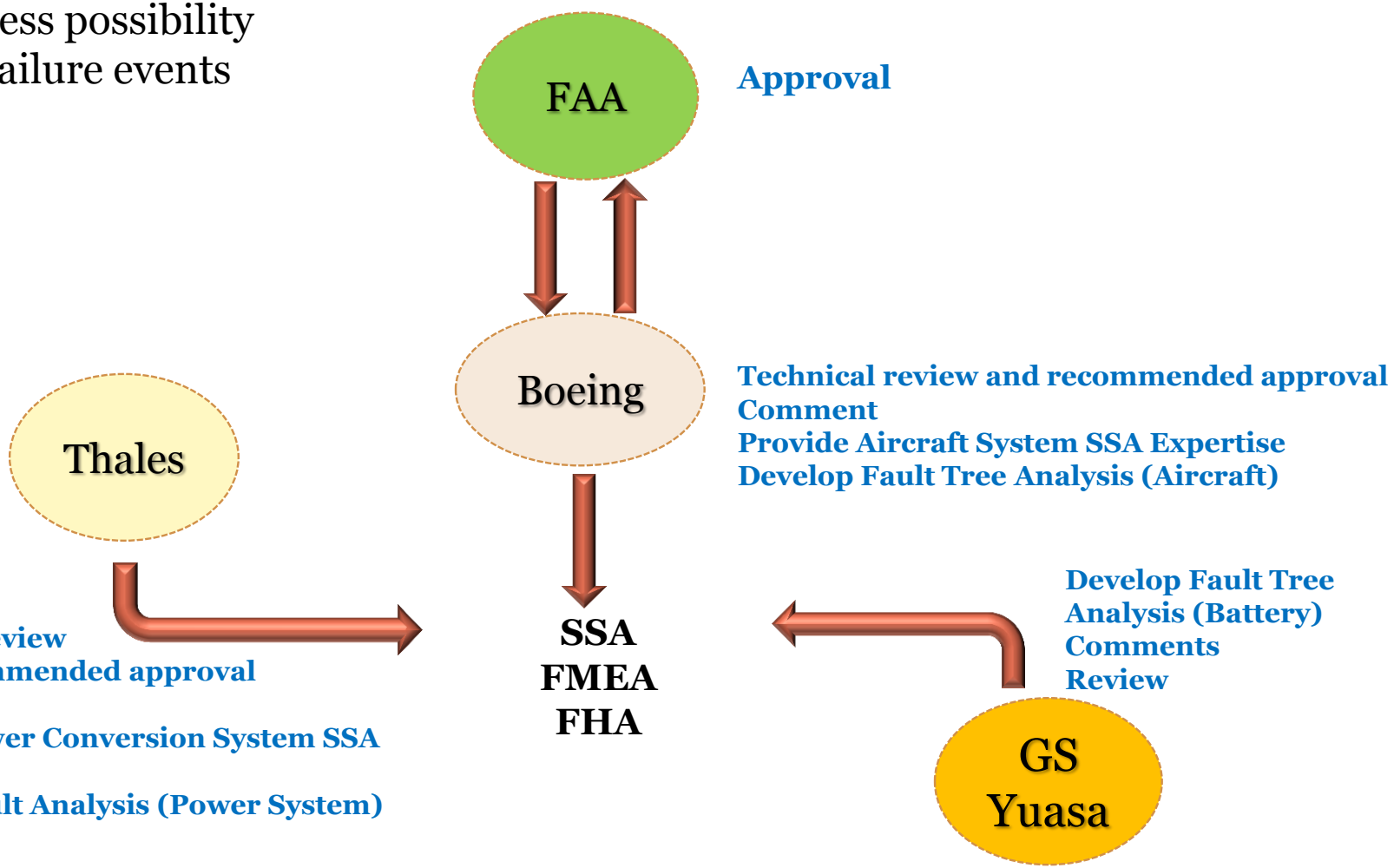


Collaboration: Qualification Test Report



Collaboration: Safety Assessment Process

Goal: Assess possibility of failure events



Qualification Testing

Test Category	Test Article	Test Name	Battery 1	Battery 2	Battery 3
Functional Test (Electrical Test)	Battery	Discharge Test (APU, E-Brake, Constant Current)	√	√	√
		Charge Test	√	√	√
Climatic Test	Battery	Temperature test (high and low)	√	√	√
		Temperature variation test	√	√[1]	√[1]
		Altitude test	√	√	√
		Overpressure test	√	√	√
		Decompression test	√	—[2]	√
		Humidity test	√	√	√
Mechanical Test	Battery	Random vibration	√	√	√
		High power vibration	—[3]	√	√
		Fan blade loss vibration	√	√	√
		Acceleration test	√	√	√
		Bench handling test	√	√	√
		Container shock test	√	√	√
EMI/EMC Test	Battery	EMI/EMC tests in accordance with D6-16050-5 (including: audio frequency conducted emission, radio frequency conducted emission, audio frequency susceptibility, radio frequency susceptibility, transient susceptibility, lighting induced transient susceptibility, BMU function, electrostatic discharge susceptibility)	√	√	√
Abuse Test	Battery	Overcharge test	√	√	√
		High temperature storage test	√	√	√
		Under discharge test	√	√	√
		External short circuit test	√	√	√
		High impedance external short circuit test	—	—	√
Abuse Test	Cell	Crush Test	—	√	√

Note 1: Fewer cycles required for QT.
Note 2: Not required because the sealing designs for the battery box and cells were the same as Battery 1.
Note 3: Not applicable